

Hazardous Energy Control (Lockout/Tagout)



Objectives

- In this course, we will cover the following:
 - The need for energy control procedures
 - Methods of lockout/tagout
 - Employer responsibilities
 - Employee training needs
 - Inspection requirements



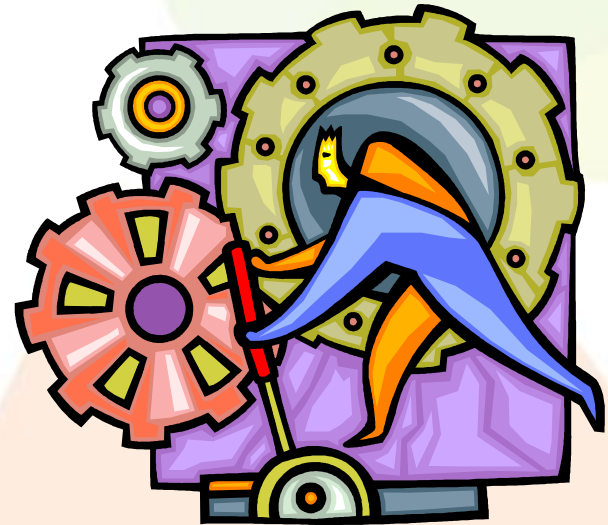
Lockout /Tagout (LOTO)

- Technically known as the **Control of Hazardous Energy**
 - LOTO is the control of energizing, starting, or stored energy in machinery or equipment which could cause injury to employees.



Scope

- Covers the ***servicing*** and/or ***maintenance*** of machines where the unexpected start-up or release of stored energy that could cause injury.
 - Construction
 - Installation and set-up
 - Adjustment or maintenance
 - Inspection
 - Modification
 - Routine service



Scope (cont'd)

- Servicing and/or maintenance which takes place during normal production operations is covered only if:
 - Employee is required to remove or bypass a guard or other safety device; **or**
 - Employee is required to place any part of their body into the point of operation or where an associated danger zone exists during a machine operation.

Scope (cont'd)

- Exception

- Minor tool changes and adjustments, ***and*** other minor servicing activities which take place during normal production operations, are ***not covered*** if they are:

- Routine, Repetitive, ***and*** Integral

-to the use of the equipment for production, provided that the work is performed using alternative measures which provide effective protection.

- **Does Not Apply** to operations where work on cord and plug connected equipment; where the plug is under exclusive control of the employee performing the servicing/maintenance.

Definitions

- **Authorized employee**

- An employee who locks out or tags out machines or equipment to perform servicing or maintenance on that machine or equipment.

- Lockout or tagout is used by these employees for their own protection.



Definitions

■ Affected employee

- An employee who performs the duties of his or her job on equipment or in an area in which the energy control procedure is implemented and servicing or maintenance operations are performed.



Definitions

- **All other employees**

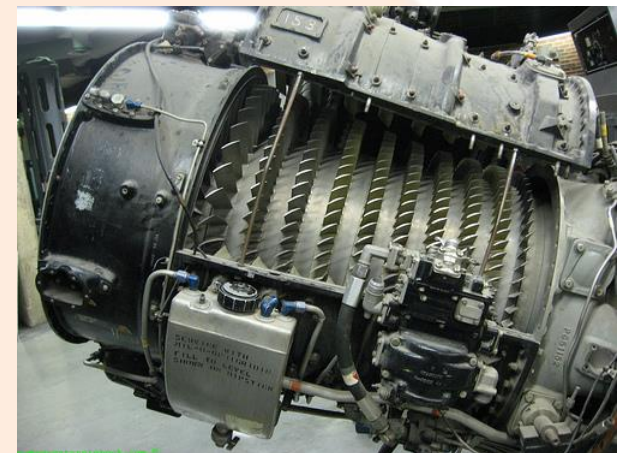
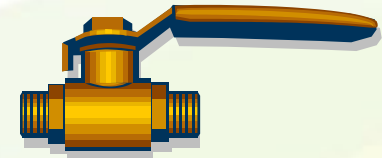
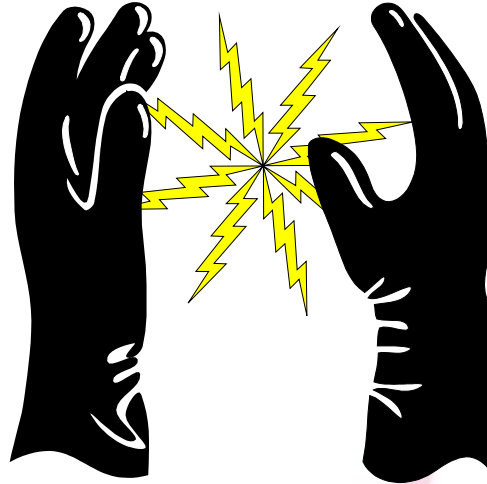
- Other employees whose work operations are, or may be, in an area where energy control procedures may be utilized.



Definitions

■ Energy source

- Mechanical
- Hydraulic
- Chemical
- Pneumatic
- Electrical
- Thermal



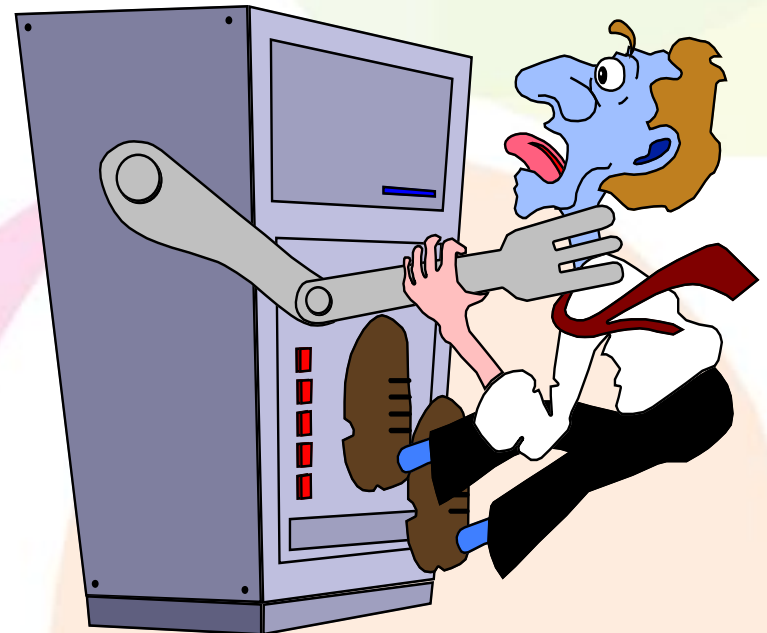
Energy Control Program

- The Energy Control Program has three parts consisting of:
 - Written energy control procedures
 - Employee training
 - Periodic inspections



Energy Control Program

- If an energy isolating device is not capable of being locked out, the employer's energy control program shall utilize a tagout system.

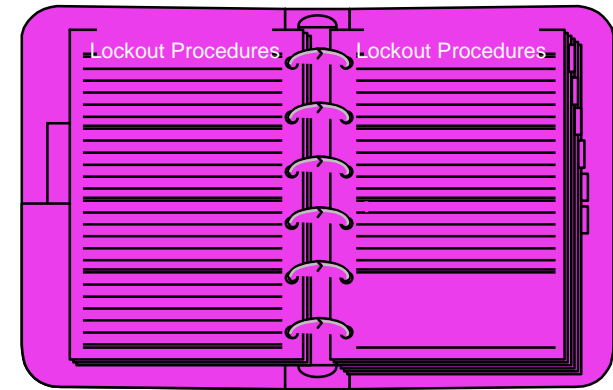


Energy Control Program

- When a tagout device is used on an energy isolating device which is capable of being locked out:
 - The tagout device shall be attached at the same location.
 - It must provide equivalent safety.



Energy Control Procedure



■ Procedures:

- Shall be developed, documented and utilized for the control of potentially hazardous energy
- Shall clearly and specifically outline techniques to be utilized to control hazardous energy
- Shall include a statement of intended use of procedure
- Shall include steps for shutting down, isolating, blocking and securing machines or equipment to control hazardous energy
- Shall include steps for the placement, removal and transfer of lockout devices or tagout devices and the responsibility for them, and
- Shall include requirements for testing machine/equipment to determine and verify effectiveness of LOTO devices and other energy control measures

Energy Control Procedure

■ Exception



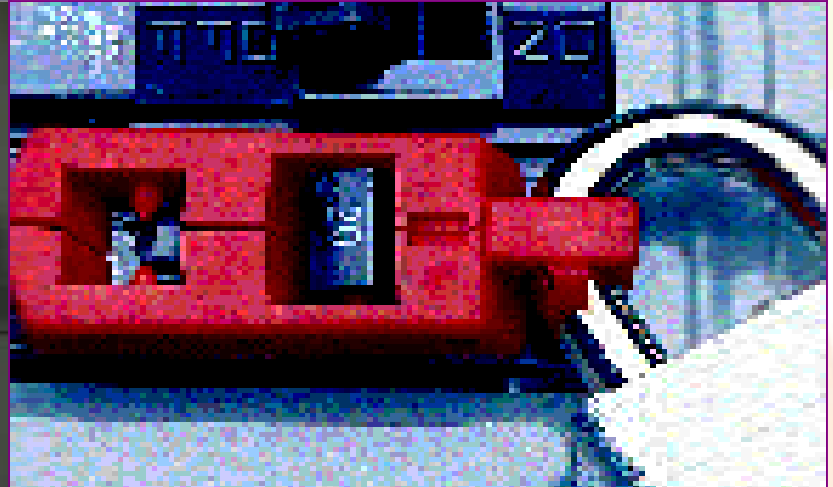
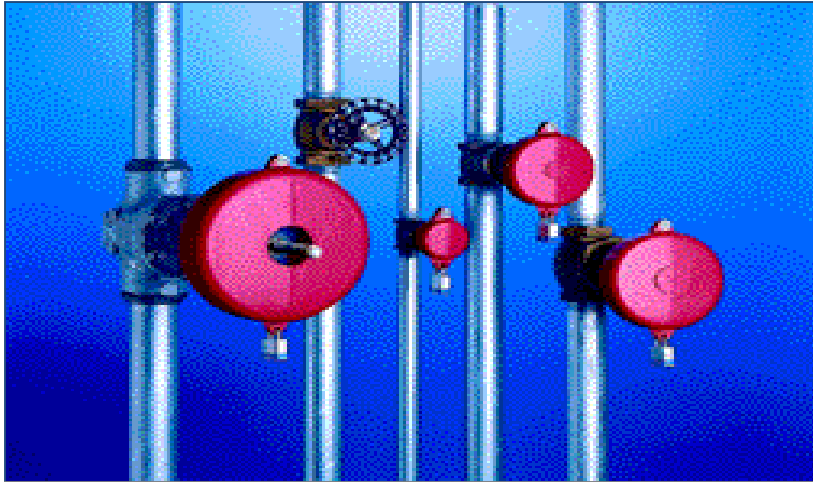
- Machine/equipment has no potential for stored/residual energy after shut down.
- Machine/equipment has a single energy source which can be readily identified and isolated.
- The isolation and locking out of energy source will completely de-energize/deactivate the machine/equipment.
- Machine/equipment is isolated from that energy source and locked out during servicing or maintenance. Single lockout device will achieve a locked-out condition.
- Lockout device is under the exclusive control of the authorized employee performing the servicing or maintenance.
- Servicing/maintenance does not create hazards for other employees; **and**
- Employer has had no accidents involving the unexpected activation/re-energization of the machine/equipment during servicing/maintenance.

Materials and Hardware

- Provided by employer
- Singularly identified
- Only device(s) used
- Not used for other purposes
- Durable
- Standardized
- Substantial
- Identifiable
- One key per employee



Types of Devices



Periodic Inspection

- Conducted at least annually to ensure procedures and requirements are followed
- Performed by an authorized employee other than the one(s) using the procedure
- Designed to correct identified deficiencies or inadequacies



Periodic Inspection (cont'd)

- Employer shall certify that periodic inspection has been performed.
- **Lockout inspection**
 - Must review each *authorized* employee's responsibilities under the energy control procedure.
- **Tagout inspection**
 - Must review each *authorized and affected* employee's responsibilities under the energy control procedure.

Training and Communication

- **Authorized employee**

- Initial and annual training is recommended
- Recognition of hazardous energy sources
- Type and magnitude of energy in workplace
- Methods and means for energy isolation and control

Authorized Employees



Training and Communication

- **Affected employee**
 - Purpose and use of the energy control procedure is referred to as Awareness Training.



Training and Communication

- **All other employees**

- Procedures for lockout and tagout
- Prohibition of restarting or re-energizing machines that are locked or tagged out



Training and Communication

■ Tagout systems

- Warning devices only; do not provide physical restraint
- Must not be removed/bypassed/ignored
- Must be legible and understandable
- Must withstand environmental conditions
- May evoke false sense of security
- Must be securely attached

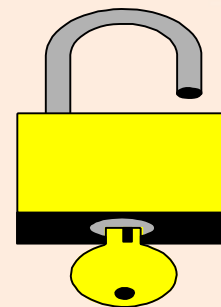


Training and Communication

- Retraining for authorized and affected employees:
 - Change in job assignments
 - Change in machines, equipment or processes that present new hazards
 - Change in energy control procedures
 - Whenever periodic inspections reveal, or employer has reason to believe, there are deviations in employee knowledge or use of procedures

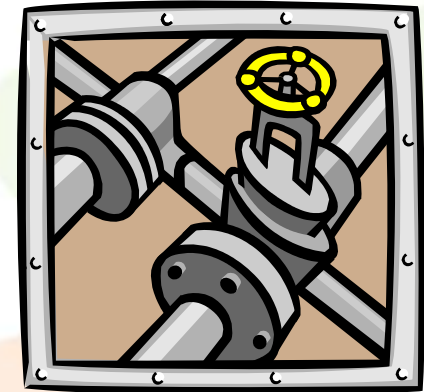
Notification of Employees

- ***Affected employees*** shall be notified by the employer or authorized employee of the application and removal of LOTO devices.
- Notification given ***before*** controls are applied, and ***after*** they are removed from the machine or equipment.



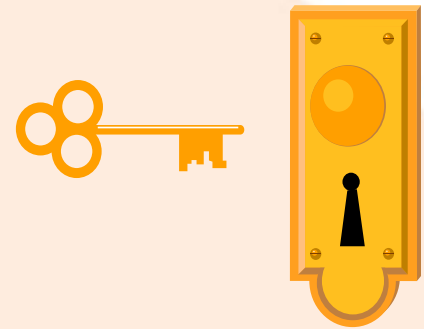
Application of Control

- Sequence for lockout/tagout procedures
 - Preparation for shutdown
 - Machine or equipment shutdown
 - Machine or equipment isolation
 - LOTO device application
 - Release of stored energy
 - Verification of isolation
 - Release from LOTO
 - Inspection of machine or equipment work area
 - Location of employees



Preparation for Shutdown

- Know the types and amounts of energy that it powers
- Know the hazards of the energy to be controlled
- Know method or means to control energy



Machine/Equipment Shutdown

- Turn off or shut down using established procedures
- Orderly shutdown to avoid additional or increased hazard(s) to employees as a result of the equipment stoppage



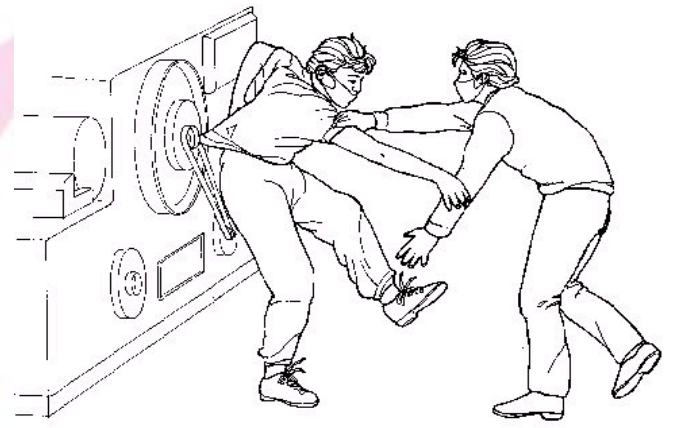
Machine/Equipment Isolation

- All energy isolating devices needed to control energy shall be physically located to isolate the machine or equipment from the energy source(s).



Verification of Isolation

- Prior to starting work on machines or equipment that have been locked out/tagged out:
 - Authorized employee shall verify that isolation and de-energization of the machine or equipment have been accomplished.



Release from Lockout/Tagout

- Before LOTO devices are removed and energy restored:
 - Inspect work area to ensure that nonessential items have been removed and to ensure that machine or equipment components are operationally intact.
 - Work area shall be checked to ensure that all employees have been safely positioned or removed.
 - Notify affected employees that LOTO devices are removed.

LOTO Devices Removal

- Each LOTO device shall be removed from each energy isolating device by the employee who applied the device.
- **Exception:** When the authorized employee who applied the LOTO device is not available, the device may be removed under the direction of the employer.



LOTO Devices Removal

- Employer removal of LOTO device
 - Specific procedure shall include:
 - Verification by employer that authorized employee who applied device is not at the facility
 - Making all reasonable efforts to contact the authorized employee to inform them that the LOTO device has been removed, **and**
 - Ensuring that the authorized employee has this knowledge before they resume work at the facility.

Testing or Positioning of Machines

- When LOTO devices must temporarily be removed for testing/positioning:
 - Clear the machine or equipment of tools and materials
 - Remove employees from area
 - Remove lockout/tagout device
 - Energize and proceed with testing or positioning
 - De-energize and reapply energy control measures



Outside Personnel

- Contractors and the on-site employer must exchange lockout/tagout information.
- On-site employees must understand and comply with rules used by the contractor.



Group Lockout/Tagout

- When performed by a group, they shall utilize a procedure which affords employee protection equivalent to a personal LOTO device. A hasp is used in a multiple lock setup.
- Primary responsibility is vested in an authorized employee.
- Authorized employee must ascertain exposure status of group members.
- If more than one crew is involved, a coordinator shall be designated. The designated coordinator will be the first to place his/her lock on the equipment and the last to remove it.
- Each authorized employee shall use a personal LOTO device and remove the device when they stop working on the machine/equipment.



Shift/Personnel Changes

- Use specific procedures during shift/personnel changes to ensure the continuity of LOTO protection. Communication between the two shift personnel shall occur. At this time, the locks are to be changed.
 - To minimize exposures from the unexpected energization or start-up of the machine/equipment, or the release of stored energy. For example, in a hydraulic energy situation, gravity will come into play. Remember to take the machine/equipment to a “zero energy state”.



Summary

In this course, we discussed:

- The need for energy control procedures
- Methods of lockout/tagout procedures
- Employer responsibilities
- Employee training needs
- Inspection requirements



**LOCKOUT / TAGOUT
Annual Procedure Inspection Certification Form**

Facility _____ Date _____

LOTO Procedure Inspected (identify machine/equipment/process) _____

Authorized Employee(s) Audited _____

Ensure the Following Steps are Taken to Lock/Tag Out the Machine/Equipment (explain any deficiencies)

- ☐ Shutdown Preparation (employee familiar w/ procedure, equipment, energy sources . . .) _____
- ☐ Inform All Affected Employees _____
- ☐ Turn Off Machine/Equipment _____
- ☐ Locate / Isolate Energy-Control Device(s) _____
- ☐ Apply Lockout and/or Tagout Device(s) _____
- ☐ Potential stored/residual energy relieved/disconnected/restrained/rendered safe _____
- ☐ Test/Verify Control(s) Disabled _____
- ☐ Return Control(s) to Off / Safe Position _____
- ☐ Begin Service/Maintenance _____

Ensure the Following Steps Taken to Restore Energy to Machine/Equipment (explain any deficiencies)

- ☐ Area/Equipment Cleared of Workers _____
- ☐ Area Cleared of Tools / Materials _____
- ☐ Machine Guards Re-installed _____
- ☐ Lockout/Tagout Devices Removed _____
- ☐ Restore Power _____
- ☐ Conduct "Trial Run" _____
- ☐ Notify Affected Employees Lockout/Tagout Completed _____

- ☐ Ensure each Authorized Employee Affixes / Removes Personal Lock(s) _____
- ☐ Ensure each Lock and/or Tag Used Properly Identifies the Worker Using It _____
- ☐ Ensure all Locks and/or Tags in Use are Standardized in Either Size/Shape/Color _____

Corrective Action(s) Taken (if applicable) _____

Name of Inspector _____

Note: Review Procedural Responsibilities With ALL Authorized Employees, Document on Training Form, Attach to This Sheet

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Questions???

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